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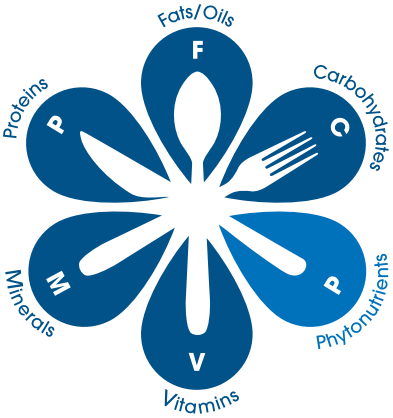
Micronutrients:

Phytonutrients

The vibrant colors and unique flavors and scents of plant foods are more than just pleasing to the eye, nose, and taste buds. They come from phytonutrients, natural compounds found in all plant foods that protect plants from pests and environmental stressors. However, phytonutrients can also support our health. Research suggests that a phytonutrient-rich diet offers many potential health benefits, from supporting cardiovascular health to better brain function. This handout breaks down plant foods by color category, highlighting their associated health benefits.



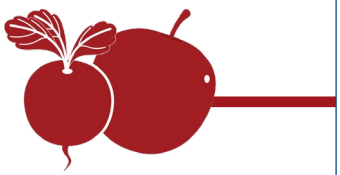
Micronutrients are nutrients the body needs small amounts of in order to function properly. This class of nutrients incudes minerals, vitamins, and phytonutrients.

Sources of Phytonutrients

Plant foods are packed with phytonutrients – at least 10,000 different types have been discovered so far![1] Fruits and vegetables are excellent sources of phytonutrients. However, you can also find these beneficial compounds in whole grains, legumes, herbs, spices, nuts, seeds, coffee, and tea.[2]

The rich colors of plant foods often reflect specific phytonutrient categories, each with unique health benefits.[3,4] By adding a rainbow of colorful foods to your plate (or your bowl or smoothie!), you can support your body with the full phytonutrient spectrum. A good rule of thumb is to eat one or two whole, natural foods from each color category daily.

The table below shows the potential health benefits associated with each color of foods:



Food Color	Potential Health Benefits
Red	*Phytonutrients in red foods are associated with:* • Reduced inflammation[5-8] • Reduced total and LDL cholesterol[9,10] • Reduced blood pressure[11–18] • A lower risk of cardiovascular disease[19,20] • A reduced risk of lung, head and neck, prostate, and breast cancers[21–24] • Increased beneficial gut bacteria[25–28] • Increased protection of the skin from sun damage[29] • Improvements in memory and cognitive function[30] • Protection against cell damage[31,32]

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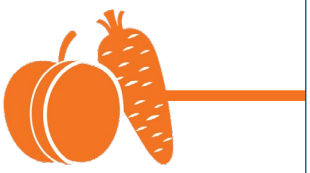
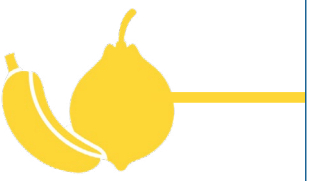
	Food Color	Potential Health Benefits
	Orange	*Phytonutrients in orange foods are associated with:* • A decreased risk of type 2 diabetes[33] • A lower risk of coronary heart disease (CHD)[34,35] • A reduced risk of breast, cervical, head, neck, and bladder cancers[21,36–38] • A lower risk of osteoporosis and bone fractures[39–41] • A reduced risk of asthma[42,43] • A healthy sperm count[44,45]
	Yellow	*Phytonutrients in yellow foods are associated with:* • A lower risk of asthma[42,43] • A reduced risk of metabolic syndrome and type 2 diabetes[29,4633,46] • A decreased risk of stroke[46] • Healthy vision[47] • A lower risk of breast, head, neck, bladder, and prostate cancers[21,23,36–38] • Protection against cell damage[48,49]
	Green	*Phytonutrients in green foods are associated with:* • A reduced risk of lung, bladder, colon, ovarian, pancreatic, stomach, prostate, and kidney cancers[50,51] • A lower risk of depression[50] • A decreased risk of coronary heart disease (CHD) and stroke[52] • Healthy brain function with aging[53,54] • Better protection against cell damage[55–57] • Enhanced detoxification of harmful chemicals[58,59] • Healthy estrogen detoxification[60,61]
	Blue/ Purple/ Black	*Phytonutrients in blue/purple/black foods are associated with:* • Maintenance of healthy cognitive function[62,63] • Decreased blood pressure[14,64] • A reduced risk of cardiovascular disease[20] • Protection from liver damage caused by inflammation[65,66] • Reduced fasting blood sugar and hemoglobin A1c[67] • Less muscle soreness and faster recovery after exercise[68] • Healthy levels of immune cells that defend the body against harmful microbes[69,70] • Protection against DNA damage[71,72]
	White/Tan/ Brown	*Phytonutrients in white/tan/brown foods are associated with:* • A decreased risk of breast, colon, esophageal, stomach, and pancreatic cancers[73,74] • Decreased total and LDL cholesterol[75,76] • A reduced risk of cardiovascular disease and supports heart health by protecting the inner walls of blood vessels[77–85] • A decreased risk of type 2 diabetes[86,87]

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